

**REMARKS**

Entry of the foregoing, re-examination and reconsideration of the subject matter identified in caption, as amended, pursuant to and consistent with 37 C.F.R. §1.112, and in light of the remarks which follow, are respectfully requested.

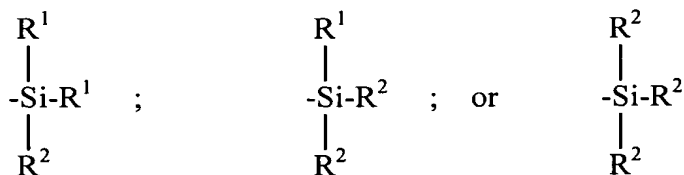
Claims 22-41 and 55-68 have been canceled without prejudice or disclaimer. Claims 1 and 42 have been amended to insert the phrase "tetrasulfide of" between the phrase "wherein said alkoxysilane". In addition, claim 42 has been amended to delete the phrase "or a tire tread" from line 1 thereof, and the word "tread" from line 14 thereof. New claims 69-73 have been added. Support for new claims 69 and 72 may be found in the Specification at page 20, for claims 60 and 73 on page 17, lines 33-35; and for claim 71 in original claims 22-41. Claims 1, 2, 5, 6, 42, 43 and 46 have been amended to insert proper Markush terminology. Claims 1-21, 42-54 and 69-73 are now pending in this application.

Claims 1-68 were rejected under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 3,873,489 (Thurn et al) or U.S. Patent No. 5,650,457 (Scholl et al) for the reasons given in paragraphs (2-6) of the Office Action. Reconsideration and withdrawal of this rejection are respectfully requested for at least the reasons which follow.

Thurn et al '489, cited in the present specification (page 3, lines 21 and 26), discloses (see Abstract) alkoxysilane polysulfides of the formula:



in which Z is:



wherein Alk represents an alkylene bridge containing 1 to 18 atoms of carbon and "n" is a whole number from 2 to 6. These alkoxysilane polysulfides are used as reinforcing additives in rubber mixtures for various industrial rubber articles, among them tires (see column 8, lines 4-11). Preferably (see column 3 lines 1-20), Alk has 2 or 3 carbon atoms (column 3, line 14), n is 2 to 4 (column 3, line 40) and Z bears three radicals  $R^2$  (see formula II, column 3, line 20).

In other words, the preferred compounds of Thurn et al '489 are disulfides, trisulfides and tetrasulfides of tri-alkoxysilanes. This is clearly confirmed by Thurn et al '489 (see column 5, lines 59-62) who expressly teaches (emphasis added) that "there are preferred relatively simply constructed organosilanes of formula I including bis-[3-triméthoxy-, -triéthoxy, and -tripropoxysilylpropyl] polysulfides, namely the di-, tri- and tetrasulfides". This is still more obvious when looking to the specific embodiments; Thurn et al '489 only uses tri-alkoxysilanes (see Examples 1 to 9).

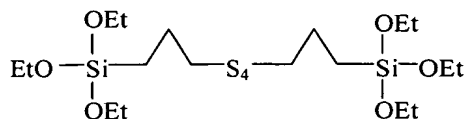
The most preferred tri-alkoxysilane polysulfide of Thurn et al '489 clearly is bis-3-triethoxysilylpropyl tetrasulfide, used in Example 2 (see Table column 10, line 13-14), Example 3 (see Table column 11), Example 5 (see Table in column 14), Example 6 (see Table in column 16), Example 7 (see Table in column 17), Example 8 (see Table in column 18), Example 9 (see Table in column 19), Example 10 (see Table in column 21), Example 11 (see Table in column 22), Example 12 (see Table in column 24). This is also the only one specific alkoxysilane polysulfide which is recited by Thurn et al '489 in the claims (claims 21 and 26).

This most preferred bis-3-triethoxysilylpropyl tetrasulfide of Thurn et al '489 is nothing more than the "TESPT" silane mentioned in the introduction of the present specification (page 3, lines 28-44) describing the known prior art. Among all these

polysulfides, mention is made in particular of bis-(trialkoxysilylpropyl) polysulfides, most particularly bis-3-triethoxysilylpropyl tetrasulfide (abbreviated to TESPT).

TESPT, of the formula  $[(C_2H_5O)_3Si(CH_2)_3S_2]_2$ , is sold in particular by Degussa under the name Si69 (or X50S when it is supported to 50% by weight on carbon black), or alternatively by Osi Specialties under the name Silquest A1289 (in both cases, in the form of a commercial mixture of polysulfides  $S_x$  having an average value of  $x$  which is close to 4). This polysulfurized alkoxy silane TESPT is today considered as being the product providing, for tires or tire treads reinforced by a reinforcing inorganic filler such as silica, the best compromise in terms of resistance to scorching, hysteresis and reinforcing ability. It is therefore the coupling agent of preference for the person skilled in the art for tires filled with silica of low rolling resistance, sometimes referred to as "Green Tires" because of the energy saving offered (or "*energy-saving Green Tires*").

TESPT is precisely that one used in the comparative examples of Test 1 of the present application, having the formula:



Comparative Examples of Test 1 (among other tests) clearly show the unexpected improvement provided by the silanes of formula (I) compared to the conventional TESPT in terms of vulcanization kinetics; the specific organosilanes of formula (I), provide curing times substantially identical to those of conventional compositions based on carbon black (note the Specification at pages 31-33).

US 5,650,457, to Scholl et al, is equivalent to EP 0680997 which has been cited as document A (i.e., not considered to be of particular relevance) by the EPO. Scholl et al '457

teaches using a methylene –  $\text{CH}_2$  – bridge rather than a conventional propylene –  $(\text{CH}_2)_3$  – bridge. According to Scholl et al '457, when compared to the reference TESPT (using a conventional propylene bridge), their specific alkoxy silane polysulfides with a methylene bridge provide advantageous temperature-dependent hysteresis properties (see column 1, lines 47-49). Moreover, among the numerous alkoxy silane polysulfides (x equals 2 to 6) taught by Scholl et al '457 (see e.g., claim 1 and claim 3, formulae in column 2), only a very limited number corresponds to the case of a mono-alkoxy silane, a tetrasulfide of mono-alkoxy silane.

Clearly, there is no teaching or suggestion in Scholl et al '457, of selecting a mono-alkoxy silane rather than a tri-alkoxy silane, and replacing the methylene bridge by a propylene bridge which would be exactly contrary to the teaching of Scholl et al '457.

Summarizing, none of the cited documents discloses nor suggests using the specific tetrasulfide of mono-alkoxy silane of formula (I) in tires as in the present invention. One of ordinary skill in the art would not have found it obvious to modify the cited prior art to arrive at the present invention.

For at least these reasons, the §103(a) rejection based on Thurn et al '489 or Scholl et al '457 should be reconsidered and withdrawn. Such action is earnestly solicited.

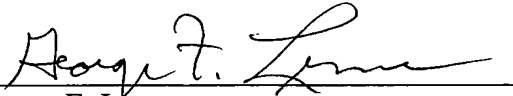
From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order and such action is earnestly solicited. If there are any

questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned at (703) 838-6683 at his earliest convenience.

Respectfully submitted,

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